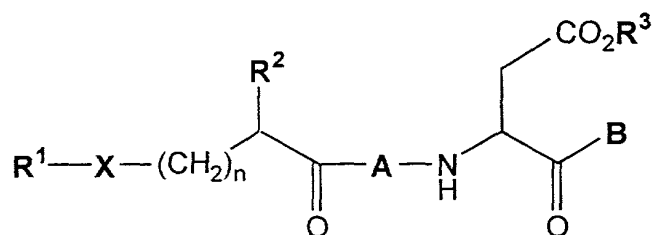


CLAIMS

We claim:

1. A compound of the following formula:



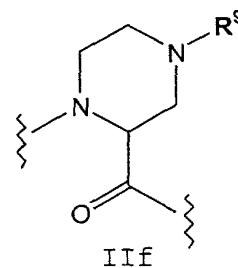
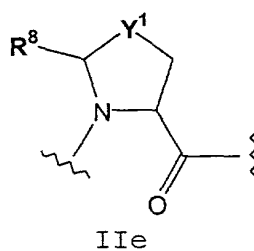
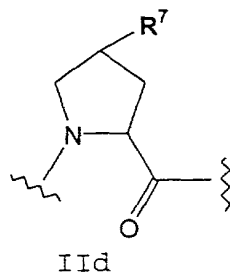
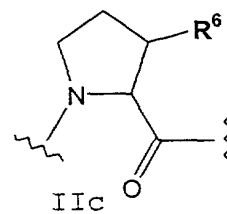
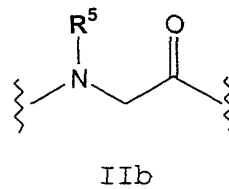
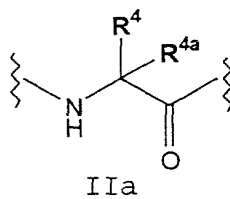
Formula I

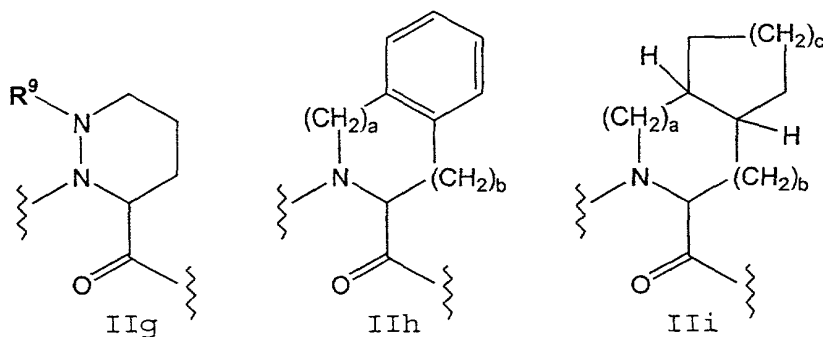
wherein:

n is 0, 1 or 2;

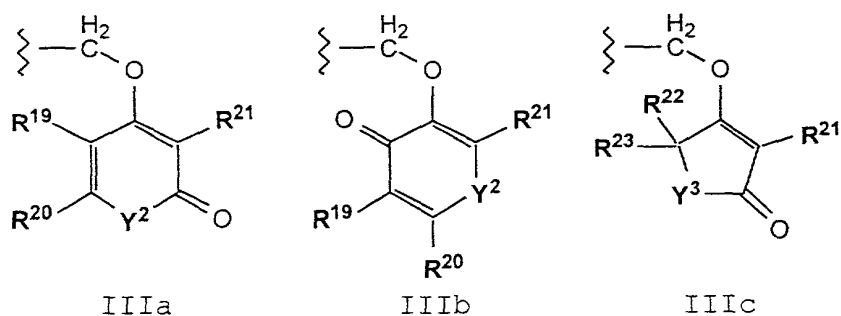
X is CH₂, C=O, O, S or NH;

A is a natural or unnatural amino acid of Formula IIa-i:





B is a hydrogen atom, a deuterium atom, C_{1-10} straight chain or branched alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, substituted naphthyl, 2-benzoxazolyl, substituted 2-oxazolyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), $(CH_2)_m$ heteroaryl, halomethyl, CO_2R^{13} , $CONR^{14}R^{15}$, CH_2ZR^{16} , $CH_2OCO(aryl)$, $CH_2OCO(heteroaryl)$, or $CH_2OPO(R^{17})R^{18}$, where Z is an oxygen or a sulfur atom, or B is a group of the Formula IIIa-c:



R^1 is phenyl, substituted phenyl, naphthyl, substituted naphthyl, heteroaryl, or substituted heteroaryl;

R^2 is hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, $(CH_2)_mNH_2$, $(CH_2)_mNHCOR^{10}$, $(CH_2)_mN(C=NH)NH_2$, $(CH_2)_pCO_2R^3$, $(CH_2)_pOR^{11}$, $(CH_2)_pSR^{12}$, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), or $(CH_2)_m$ heteroaryl, wherein heteroaryl includes (but is not limited to)

pyridyl, thienyl, furyl, thiazolyl, imidazolyl, pyrazolyl, isoxazolyl, pyrazinyl, pyrimidyl, triazinyl, tetrazolyl, and indolyl;

R^3 is hydrogen, alkyl, cycloalkyl, (cycloalkyl)alkyl, phenylalkyl, or substituted phenylalkyl;

and wherein

R^4 is alkyl, cycloalkyl, phenyl, substituted phenyl, $(CH_2)_mNH_2$, $(CH_2)_mNHCOR^{10}$, $(CH_2)_mN(C=NH)NH_2$, $(CH_2)_pCO_2R^3$, $(CH_2)_pOR^{11}$, $(CH_2)_pSR^{12}$, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), or $(CH_2)_m$ heteroaryl, wherein heteroaryl includes (but is not limited to) pyridyl, thienyl, furyl, thiazolyl, imidazolyl, pyrazolyl, isoxazolyl, pyrazinyl, pyrimidyl, triazinyl, tetrazolyl, and indolyl;

R^{4a} is hydrogen, or methyl, or R^4 and R^{4a} taken together are $-(CH_2)_d-$ where d is an interger from 2 to 6;

R^5 is phenyl, substituted phenyl, $(CH_2)_p$ phenyl, $(CH_2)_p$ (substituted phenyl), cycloalkyl, or benzofused cycloalkyl;

R^6 is hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^7 is hydrogen, fluorine, oxo, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), OR^{11} , SR^{12} , or $NHCOR^{10}$;

R^8 is hydrogen, oxo, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^9 is alkyl, cycloalkyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), or COR^{10} ;

R^{10} is hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), OR^{13} , or $NR^{14}R^{15}$;

R^{11} is hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^{12} is alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^{13} is alkyl, cycloalkyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^{14} is hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, substituted naphthyl, $(CH_2)_m$ cycloalkyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), or $(CH_2)_m$ (1 or 2-naphthyl);

R^{15} is hydrogen or alkyl; or

R^{14} and R^{15} taken together form a five, six or seven membered carbocyclic or heterocyclic ring, such as morpholine or N-substituted piperazine;

R^{16} is phenyl, substituted phenyl, naphthyl, substituted naphthyl, heteroaryl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1 or 2-naphthyl), or $(CH_2)_m$ heteroaryl;

R^{17} and R^{18} are independently alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, or phenylalkyl, substituted phenylalkyl, or (cycloalkyl)alkyl;

R^{19} and R^{20} are independently hydrogen, alkyl, phenyl, substituted phenyl, $(CH_2)_m$ phenyl, or $(CH_2)_m$ (substituted phenyl), or R^{19} and R^{20} taken together are $-(CH=CH)_2-$;

R^{21} is hydrogen, alkyl, phenyl, substituted phenyl, $(CH_2)_m$ phenyl, $(CH_2)_m$ (substituted phenyl);

R^{22} , R^{23} and R^{24} are independently hydrogen or alkyl;

Y^1 is CH_2 , $(CH_2)_2$, $(CH_2)_3$, or S;

Y^2 is O or NR^{24} ;

Y^3 is CH_2 , O, or NR^{24} ;

a is 0 or 1 and b is 1 or 2, provided that when a is 1 then b is 1;

c is 1 or 2, provided that when c is 1 then a is 0 and b is 1;

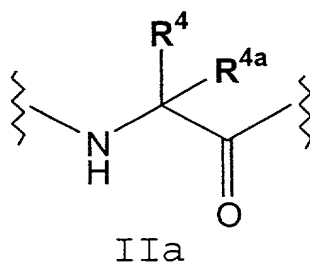
m is 1, 2, 3 or 4; and

p is 1 or 2;

or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1 where X is oxygen.
3. The compound of claim 1 where X is sulfur.
4. The compound of claim 1 where X is NH.
5. The compound of claim 1 where X is CH_2 .
6. The compound of claim 1 where X is C=O.

7. The compound of claim 1 wherein A is

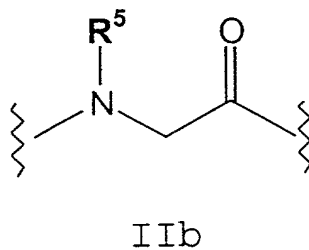


8. The compound of claim 7 wherein

R^4 is lower alkyl, cycloalkyl, phenyl, substituted phenyl, $(CH_2)_nNH_2$, $(CH_2)_mOR^{10}$, $(CH_2)_mSR^{11}$, $(CH_2)_ncycloalkyl$, $(CH_2)_nphenyl$, $(CH_2)_n(substituted\ phenyl)$, or $(CH_2)_n(1\ or\ 2-naphthyl)$; and

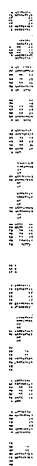
R^{4a} is hydrogen.

9. The compound of claim 1 wherein A is



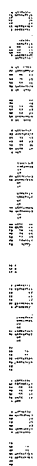
10. The compound of claim 9 wherein R^5 is phenyl, substituted phenyl, $(CH_2)_mphenyl$, $(CH_2)_m(substituted\ phenyl)$, cycloalkyl, or 2-indanyl.

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- Figure 1: Schematic representation of the 12 genes and their expression patterns. The figure shows 12 genes (a-l) with their corresponding expression patterns across various tissues. The patterns are represented by horizontal bars with different shades of gray indicating expression levels. The genes are: a) 12O-acyl-CoA oxidase, b) 12L-acyl-CoA oxidase, c) 12H-acyl-CoA oxidase, d) 12M-acyl-CoA oxidase, e) 12A-acyl-CoA oxidase, f) 12B-acyl-CoA oxidase, g) 12C-acyl-CoA oxidase, h) 12D-acyl-CoA oxidase, i) 12E-acyl-CoA oxidase, j) 12F-acyl-CoA oxidase, k) 12G-acyl-CoA oxidase, and l) 12I-acyl-CoA oxidase. The expression patterns are shown for various tissues including liver, heart, muscle, and brain.



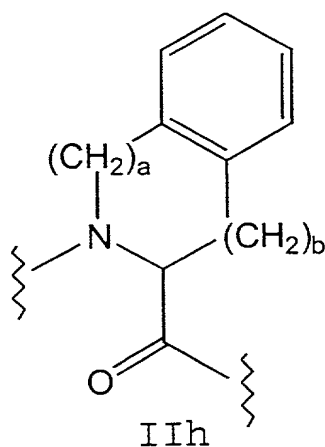
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15. The compound of claim 1 wherein A is



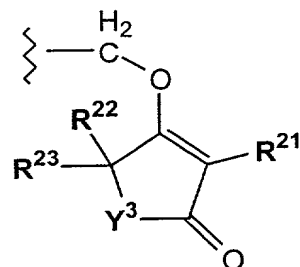
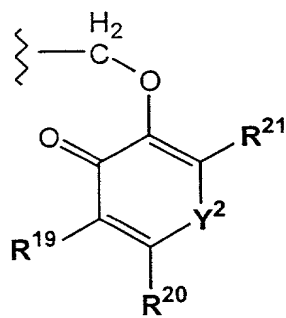
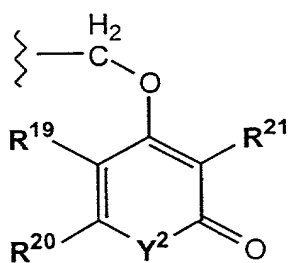
16. The compound of claim 15 wherein a is 0.

17. The compound of claim 1 wherein

B is hydrogen, 2-benzoxazolyl, substituted 2-oxazolyl, $\text{CH}_2\text{ZR}^{15}$, $\text{CH}_2\text{OCO}(\text{aryl})$, or $\text{CH}_2\text{OPO}(\text{R}^{16})\text{R}^{17}$; and

Z is O or S.

18. The compound of claim 1 wherein B is



19. The compound of claim 18 wherein R^{19} and R^{20} are independently hydrogen, alkyl, or phenyl, or wherein R^{19} and R^{20} taken together are $-(CH=CH)_2-$.

20. The compound of claim 1 wherein

X is O or NH;

n is 0 or 1;

R^1 is substituted phenyl, naphthyl, or substituted naphthyl;

R^2 is hydrogen, lower alkyl, $(CH_2)_pCO_2R^3$, $(CH_2)_m$ (substituted phenyl), $(CH_2)_m$ (1- or 2-naphthyl), or $(CH_2)_m$ tetrazolyl; and

R^3 is hydrogen or lower alkyl.

21. The compound of claim 20 wherein R^1 is 1-naphthyl.

22. The compound of claim 20 wherein R^1 is 2-naphthyl.

23. The compound of claim 20 wherein R^1 is substituted naphthyl.

24. The compound of claim 23 wherein substituted naphthyl is 2-carboxy-1-naphthyl.

25. The compound of claim 20 wherein R^1 is substituted phenyl.

26. The compound of claim 25 wherein substituted phenyl is 2-substituted phenyl.

27. The compound of claim 26 wherein 2-substituted phenyl is (2-phenyl)phenyl.
28. The compound of claim 20 wherein A is alanine, valine, leucine cyclohexylalanine, phenylglycine or t-butylglycine.
29. The compound of claim 28 wherein R^1 is 1-naphthyl.
30. The compound of claim 28 wherein R^1 is 2-naphthyl.
31. The compound of claim 28 wherein R^1 is substituted naphthyl.
32. The compound of claim 31 wherein substituted naphthyl is 2-carboxy-1-naphthyl.
33. The compound of claim 28 wherein R^1 is 2-substituted phenyl.
34. The compound of claim 33 wherein 2-substituted phenyl is (2-phenyl)phenyl.
35. The compound of claim 20 wherein R^2 is $(CH_2)_2CO_2R^3$ and n is 0.
36. A pharmaceutical composition comprising a compound of claim 1 in combination with a pharmaceutically acceptable carrier.

37. A method for treating an autoimmune disease, comprising administering an effective amount of the pharmaceutical composition of claim 36 to a patient in need thereof.

38. A method of treating an inflammatory disease, comprising administering an effective amount of the pharmaceutical composition of claim 36 to a patient in need thereof.

39. A method of treating a neurodegenerative disease, comprising administering an effective amount of the pharmaceutical composition of claim 36 to a patient in need thereof.

40. A method of preventing ischemic injury to a patient suffering from a disease associated with ischemic injury, comprising administering an effective amount of the pharmaceutical composition of claim 36 to a patient in need thereof.

41. A method for expanding of hematopoietic cell populations or enhancing their survival, comprising contacting the cells with an effective amount of the pharmaceutical composition of claim 36.

42. The method of claim 41 wherein the cell populations are granulocytes, monocytes, erythrocytes, lymphocytes or platelets for use in cell transfusions.

43. A method of prolonging the viability of an organ that has been removed from a donor or isolated cells derived from an organ for the purpose of a

Figure 1 displays 12 horizontal bar charts, each representing a different demographic or lifestyle category. The y-axis for all charts is 'Percentage' (0-100%). The x-axis for all charts is 'Age Group' (18-24, 25-34, 35-44, 45-54, 55-64, 65+).

- 1. Age:** Shows the percentage of respondents in each age group. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 2. Gender:** Shows the percentage of respondents for Male and Female. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 3. Education:** Shows the percentage of respondents for High School, College, and Graduate. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 4. Income:** Shows the percentage of respondents for Low, Middle, and High. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 5. Employment:** Shows the percentage of respondents for Full-time, Part-time, and Unemployed. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 6. Marital Status:** Shows the percentage of respondents for Single, Married, Divorced, and Widowed. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 7. Religion:** Shows the percentage of respondents for Christian, Muslim, Hindu, and Other. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 8. Ethnicity:** Shows the percentage of respondents for White, Black, Asian, and Other. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 9. Political Affiliation:** Shows the percentage of respondents for Democrat, Republican, and Independent. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 10. Health Status:** Shows the percentage of respondents for Good, Fair, and Poor. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 11. Living Arrangements:** Shows the percentage of respondents for Alone, With Family, and With Friends. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
- 12. Travel Frequency:** Shows the percentage of respondents for Often, Sometimes, and Never. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.

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- Figure 1 displays 12 horizontal bar charts, each representing a different demographic or lifestyle category. The y-axis for all charts is 'Percentage' (0-100%). The x-axis for all charts is 'Age Group' (18-24, 25-34, 35-44, 45-54, 55-64, 65+).
- 1. Age:** Shows the percentage of respondents in each age group. The distribution is relatively even across all age groups, with a slight increase in the 65+ group.
 - 2. Gender:** Shows the percentage of respondents for Male and Female. Male respondents are consistently higher than female respondents across all age groups.
 - 3. Education:** Shows the percentage of respondents for High School, College, and Graduate. College and Graduate degrees are more prevalent in younger age groups, while High School is more prevalent in older age groups.
 - 4. Income:** Shows the percentage of respondents for Low, Middle, and High income. High income is more prevalent in younger age groups, while Low income is more prevalent in older age groups.
 - 5. Employment:** Shows the percentage of respondents for Full-time, Part-time, and Unemployed. Full-time employment is more prevalent in younger age groups, while Unemployment is more prevalent in older age groups.
 - 6. Marital Status:** Shows the percentage of respondents for Single, Married, Divorced, and Widowed. Married is the most prevalent status across all age groups.
 - 7. Religion:** Shows the percentage of respondents for Christian, Muslim, Hindu, and Other. Christian is the most prevalent religion across all age groups.
 - 8. Ethnicity:** Shows the percentage of respondents for White, Black, Asian, and Other. White is the most prevalent ethnicity across all age groups.
 - 9. Political Affiliation:** Shows the percentage of respondents for Democrat, Republican, and Independent. Democrat is the most prevalent affiliation across all age groups.
 - 10. Health Status:** Shows the percentage of respondents for Good, Fair, and Poor. Good health status is more prevalent in younger age groups, while Poor health status is more prevalent in older age groups.
 - 11. Living Arrangements:** Shows the percentage of respondents for Alone, With Family, and With Friends. Living alone is more prevalent in older age groups, while living with family is more prevalent in younger age groups.
 - 12. Travel Frequency:** Shows the percentage of respondents for Often, Sometimes, and Never. Traveling often is more prevalent in younger age groups, while traveling never is more prevalent in older age groups.